

Correspondence: Paloma MANEA
Address: No. 6 Șos. Bucium, code 700282
Tel.: +40.722.569.770, E-mail: maneacpaloma@yahoo.com

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SEVERE HYDRO-ELECTROLYTE IMBALANCES WITH REDUTABLE CLINICAL CONSEQUENCES. CASE REPORT

Paloma MANEA, Rodica GHIURCU, Radu ANDREI

Paloma MANEA – M. D., Ph. D., Assistant Professor, “Gr. T. Popa” University of Medicine and Pharmacy, Iași, 1st Medical Department, Vth Medical and Geriatrics – Gerontology Clinic, Iași, Romania; Cardiologist, Senior in Internal Medicine, Railway Clinical University Hospital, Iași, Romania

Rodica GHIURCU – M. D., Ph. D., Professor, “Gr. T. Popa” University of Medicine and Pharmacy, Iași, 1st Medical Department, Vth Medical and Geriatrics – Gerontology Clinic, Senior Cardiologist, Internal Medicine, Geriatrics and Gerontology, Railway Clinical University Hospital, Iași, Romania

Radu ANDREI – M. D., Ph. D., Assistant Professor, “Petre Andrei” University, Iași, Senior Psychiatrist, VIIIth Psychiatry Clinic, “Socola” Clinical Psychiatric Hospital Iași, Romania

ABSTRACT:

Our case report was following a 76 years female patient's evolution; she came for a psychiatric consultation, because she had neuropsychiatric manifestations (memory loss, hallucinations, lethargy, mobility difficulties). A cardiologic evaluation was recommended, because she had significant cardiovascular medical history (arterial hypertension, heart failure). Physical examination revealed dehydration, cardiac arrhythmia. Laboratory findings confirmed severe hyponatremia and hypokalemia. The electrocardiogram confirmed ventricular and supraventricular ectopic beats, with tendency to become doublets. The echocardiography confirmed atherosclerotic mitral and aortic valvulopathies and moderate systolic dysfunction of left ventricle. Because she felt increasing dyspnea, she was taking Furosemid 80 mg/day (without medical recommendation); she also continued to take the other cardiovascular drugs, previously recommended by a cardiologist: Perindopril/Indapamide 5/1.25 mg plus Carvedilol 6.25 mg, twice daily. Adequate correction of the electrolyte imbalances lead to complete resolution of the psychiatric manifestations.

Keywords: hyponatremia, hypokalemia, dehydration, neuropsychiatric manifestations, arterial hypertension

REZUMAT:

Prezentarea de caz clinic urmărește evoluția unei paciente în vârstă de 76 de ani, care se adresează pentru evaluare psihiatrică, din cauza unor tulburări neuro-psihiice (deficit mnezic, halucinații, letargie, dificultăți în mobilizarea activă). Având în vedere antecedentele personale patologice cardiovasculare semnificative (istoric medical de hipertensiune arterială, complicată cu insuficiența cardia-

că), este recomandat consult cardiologic. Examenul obiectiv decelează semne de deshidratare, zgomote cardiace aritmice. Determinările de laborator relevă hiponatremie și hipopotasemie severe. Electrocardiograma confirmă prezența extrasisolelor ventriculare și supraventriculare, cu tendință la cuplare în dublete. Ecocardiografic, se constată leziuni valvulare degenerative, mitro-aortice și disfuncție sistolică moderată a ventriculului stâng. Pacienta își administrase din proprie inițiativă, la domiciliu, pentru că remarcase accentuarea dispneei, Furosemid 80 mg/zi, continuând și medicația de uz cardiovascular recomandată de specialist: Perindopril/Indapamidă 5/1,25mg și Carvedilol 6,25 mg de două ori pe zi. Corecția promptă a dezechilibrelor hidro-electrolitice a condus la dispariția completă a simptomatologiei neuro-psihiice.

Cuvinte-cheie: hiponatremie, hipopotasemie, deshidratare, tulburări neuro-psihiice, hipertensiune arterială

INTRODUCTION

Interdisciplinary approach of the geriatric patients is essential for a correct diagnosis and adequate therapy. Self-medication could be present in these patients, especially cardiovascular drugs administered without the cardiologist's recommendation. This self-medication could be followed by secondary life-threatening effects. An example for this situation is represented by uncontrolled administration of loop diuretics, tiazides and tiazide-like diuretics. Secondary hyponatremia due to these drugs could be clinically expressed by neuropsychiatric symptoms like: memory loss, hallucinations, anorexia, anxiety; hypokalemia could reveal: delayed cognition, movement difficulties, lethargy (1). The importance of good electrolytes balance had been also proved for the previous psychiatric disorders and associated electrolytes disturbance. Koizumi *et al.* revealed delirant episode shortening for psychiatric patients with good correction of electrolytes imbalance (2). Catani *et al.* proved the worsening of these biochemical disturbances after psychotropic agents, especially for the patients with refeeding syndrome, after starvation due to psychiatric disease (3). Similar symptoms to depression could occur in hyponatremia and hypokalemia (4). Severe hyponatremia could provoke cerebral edema and hyponatremic encephalopathy, followed by seizures, respiratory arrest and coma (5). The treatment of severe hyponatremia (serum sodium < 120 mEq/l) consisted in rapid correction of the sodium deficit, during first hours, followed by slow correction, during next days, according to osmotic demyelination syndrome prevention (6). Severe hypokalemia could provoke muscle hypotonia, with a redutable sign, during the patient's evolution: tetraparesis (7) and electrocardiographic changes: arrhythmias. Emergency therapy, with parenteral potassium administration is required if serum potassium is below 2.5 mEq/l or if arrhythmias are associated.

CASE REPORT

A 76 years female patient remarked neuropsychiatric symptoms (3 days ago); she had a previous cognitive and emotional status, according to her age and related cardiovascular diseases. She was compliant, well inserted in social activities of her rural community. During last seven days (before medical consult), she took (without medical recommendation) two tablets (80 mg) Furosemide, daily, because she remarked increasing dyspnea on efforts, after sustained physical work.

The patient had a significant medical history; she had been diagnosed (two years ago) with isolated systolic arterial hypertension grade 2, high cardiovascular risk, angina pectoris on efforts, atherosclerotic aortic valve disease (moderate aortic stenosis; moderate aortic regurgitation), moderate atherosclerotic mitral regurgitation and chronic heart failure class II NYHA (NEW YORK HEART ASSOCIATION). The patient received life style and prophylaxis against infective endocarditis recommendations and medical treatment with: Perindopril/Indapamide 5/1.25 mg; Carvedilol 6.25 mg, twice daily. She came to cardiologic reevaluation, each four months and we remarked that she had adherence to treatment and favourable evolution.

She associated Furosemide 80 mg/day, for seven days, without medical advice. She remarked, as well as her family, the occurrence of hallucinations, memory loss, lethargy and muscle weakness, after four days with high doses treatment of Furosemide. Because of these symptoms, she first came

to a psychiatrist and he recommended a cardiologic reevaluation. Physical examination revealed dehydration (arterial hypotension: 90/60 mmHg; ocular hypotonia, persistent skin plicature); arrhythmia, mitral and aortic systolic murmurs, adynamia, confusion. Laboratory findings remarked hyponatremia (serum sodium 125 mEq/l-normal values: 135 – 145 mEq/l) and hypokalemia (serum potassium 2.6 mEq/l-normal values: 3.5 – 4.5 mEq/l). Supraventricular and ventricular premature beats, with systematization to doublets were revealed in the electrocardiogram (Fig. 1).

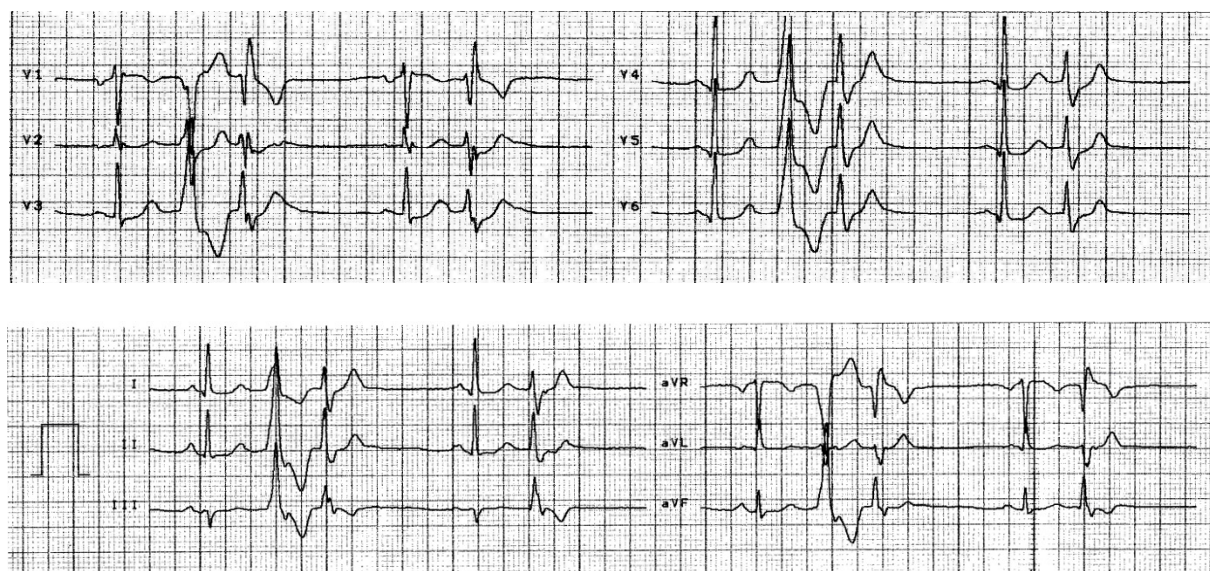


Figure 1: *The electrocardiogram of the patient, before electrolytes rebalancing (ventricular and supraventricular premature beats)*

Transthoracic echocardiography confirmed mitral and aortic valvulopathies, at the same severity as previously (fig. 2, 3); we didn't observe suggestive images for infective endocarditis (in echography) and the moderate systolic dysfunction of left ventricle was stable, according to her ischemic and hypertensive cardiomyopathy.

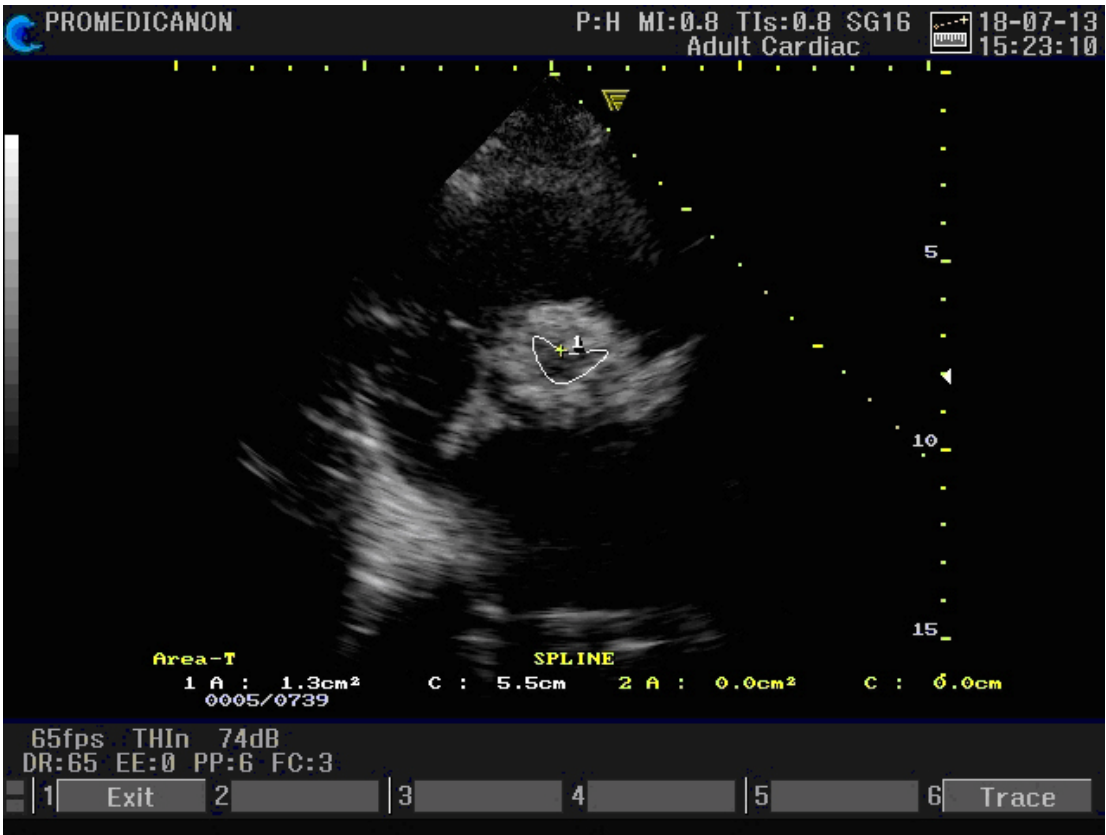


Figure 2: Planimetric surface calculation for aortic valve (moderate aortic stenosis)

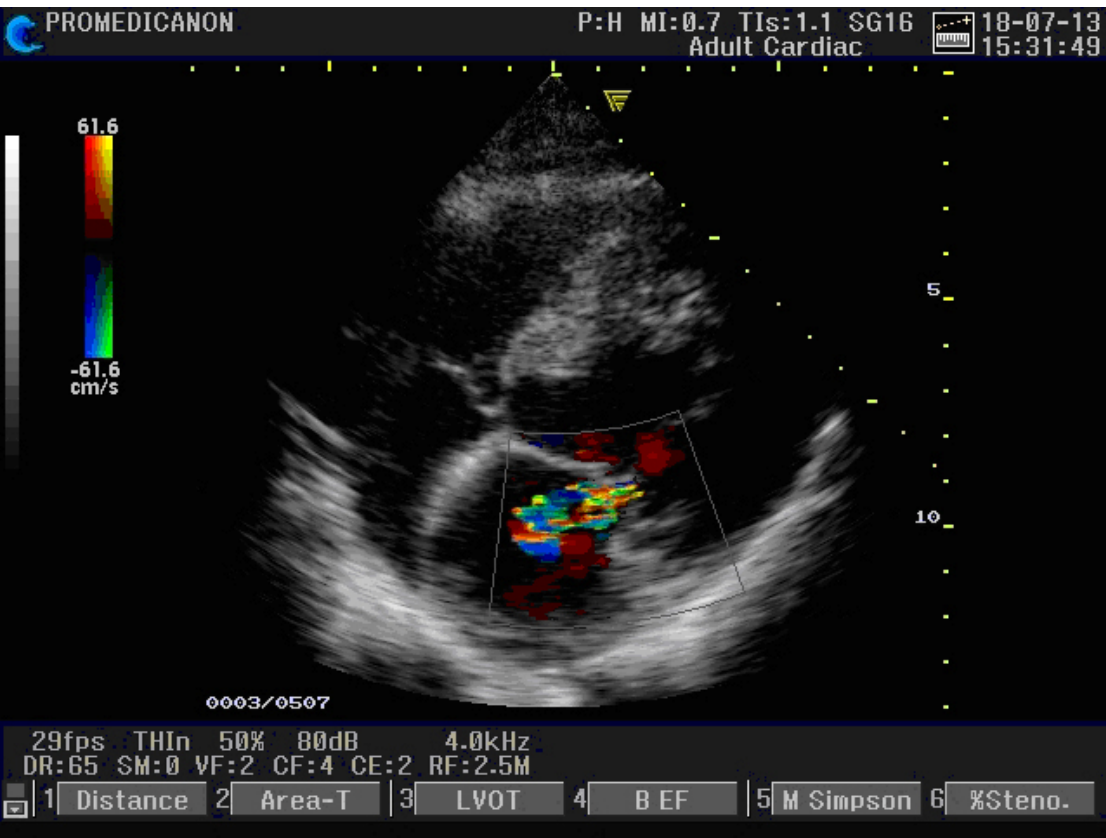


Figure 3: Moderate mitral regurgitation (transthoracic echocardiography, 4 chambers apical section)

We administrated emergency therapy for hydro-electrolyte disorders: Sodium Chloride 0.9 %, with clinical (blood pressure values, pulmonary auscultation, liver size, mental status) and paraclinical monitorization (sodium values); Potassium Chloride 7.45 %, intravenous administration, in dilution, with electrocardiographic and laboratory follow up (potassium values). The patient's outcome was favourable, with complete resolution of the neuropsychiatric symptoms after adequate electrolyte balance (after three days), hemodynamic stability and arrhythmias resolution (one day).

DISCUSSIONS

Our case confirmed, once again, the fact that we could meet a lot of diagnosis pitfalls in medical profession; we could avoid these pitfalls, if we made a good corroboration between clinical and paraclinical data. The presentation of our patient with emergent psychiatric symptoms was atypical, because she had normal previous mental status; the trap at this first step was the onset of vascular dementia (associated disease). The interdisciplinary approach leads to a correct diagnosis, an adequate therapy of severe biochemical disturbances and a complete resolution of psychiatric symptoms.

ACKNOWLEDGMENTS AND DISCLOSURE

The authors declare that they have no potential conflicts of interest to disclose.

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